Sea Engineering Inc.

Daily Oversight Log

Project: NBSA
Proj. Location: Newark Bay, Newark, NJ
Client: HDR/HQI, LBG, EPA
Date: 6-Dec-2012
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Survey Information

Personnel:	Bob Wallace, George Main, John Bean, Len (OSI)	**Survey Company:**	Ocean Surveys, Inc.
	Cliff Firstenberg (TSI)	**Weather Conditions:**	Clear, sunny, cold (40-deg)
	Jason Magalen (SEI)		Breezy (5-15 knts)
Start Time:	7:30 **Stop Time:** 17:55		Waves less than 3'

Daily Log of Activities and Observations

Time (EDT)	Activity Description
7:30	Arrive on-site at RRYC
8:00	Jason (SEI), Cliff(TSI) and Bob (OSI) discuss project status and potential field modifications:
	1) Request that OSI records a long-term record of position with the GPS base station for static submission
	to OPUS, for a secondary check on position, on a separate day, that can be compared to the position
	solution being used.
	2) OSI to survey an XYZ point on a pile in RRYCfor horizontal and vertical position verification. This
	point will be used for daily horizontal position verification (navigation check). Further, it will be used for
	tide elevation verification when it isn't possible to verify on the Port Elizabeth tide board (i.e. due to
	poor weather conditions). However, a daily tide elevation check at the Port Elizabeth tide board will be
	obtained, primarily, as possible.
	3) Single-beam survey data will target a 2' water depth at the time of survey. However, due to
	practical limitations of surveying, the surveyors will survey only as shallow as possible and may stop
	offshore of the 2' isobath for safety reasons or data QC reasons (e.g. if the echosounder performance
	deteriorates due to extreme shallow water)
	4) OSI to attempt to find and occupy the NOAA Port Elizabeth tidal benchmarks at the Port Elizabeth
	terminals for additional positioning QC checks
8:15	Depart RRYC and head toward Port Elizabeth terminals
8:40	Tide board reading: 5.35' (in tide board datum; requires conversion to NGVD29)
8:50	Jason (SEI), Cliff (TSI) and Bob (OSI) on Port Elizabeth terminal grounds searching for the NOAA
	tidal benchmark monuments. No monuments were discovered (possibly destroyed during paving
	and/or construction activities.
9:15	Back on vessel ABLE II
9:30	Tied up near Pt 51 (NY/NJ Port Authority monument) to verify horizontal and vertical measurements
	again. There is a new 0.2' vertical offset between the RTK measurement and reported monument elev.
	Since the elevations of the Port Authority monuments were previously checking in, it is thought that
	there might be a setting that had been changed on the base station when the base station was set to
	record a long-duration position measurement.
9:40	RTK elevation reading at Pt 51 checked again (after gantry cranes above had moved), in case GPS
	multi-path signal measurement was the cause of the problem. Still a vertical discrepancy of 0.2'.
	-Travel back to RRYC to check base station settings
10:10	Base station appears to be operating properly. Base station was re-set, and collection of long-duration
	position measurements was halted (will be completed overnight)
	-Elevation checked by vessel READY II at the tide board after resetting of the base station. Elevation
	checks in again.
10:15	Depart RRYC and head toward Port Elizabeth terminals to verify ABLE II GPS positioning again
10:30	READY II measures top of tide board with RTK GPS. Compared to elevation obtained via level loop
	from Port Authority monuments. Slight discrepancy between measurements.
10:35	Tide board reading: 7.85' (tide board datum)
11:00	ABLE II and READY II tide up along north side of Port Elizabth Terminals to ensure both vessels are in
	agreement with elevation measurements.
	-Vertical offfsets are re-measured on both vessels and all software settings are updated/verified

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Survey Information

Personnel:	Bob Wallace, George Main, John Bean, Len (OSI)	**Survey Company:**	Ocean Surveys, Inc.
	Cliff Firstenberg (TSI)	**Weather Conditions:**	-
	Jason Magalen (SEI)		-
Start Time:	7:30 **Stop Time:** 17:55		-

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11:20	Both vessels are in agreement with respect to elevation measurements now. Head back to tide board.
11:30	ABLE II places multi-beam head in the water and completes an initial bar check
11:40	READY II resurveys the top of the tide board and Port Authority points at the NE corner of the terminals
11:50	The tide board readings agree with the RTK GPS elevation being measured on ABLE II
	-Vertical measurement systems of the vessels are in agreement with each other and (seemingly) in the
	proper vertical datum (checking in well with the established Port Authority monuments).
12:00	ABLE II completes sound velocity cast in the navigation channel east of Port Elizabeth.
12:15	ABLE II begins patch test of the down-looking multi-beam system in the Central Bay, along the Eastern
	navigation channel slope east of Port Elizabeth
	-Weather update: winds have calmed down greatly; waves less than 1', still cold (40-deg); sunny
12:45	Processing data for patch test and obtaining patch test offsets
13:30	Patch test values determined after at least 3 tests for each offset within HYPACK
	Offsets used - Roll: +1.03 deg, Pitch -1.20 deg, Yaw 0.2 deg, latency 0.0 sec
	Latency was assumed to be zero initially; but also was tested to be 0 seconds.
13:45	Enter initial patch test values into HYPACK and transit to the navigation channel to begin
	performance testing. ('initial' patch test values as OSI may re-process and derve new values
	prior to post-processing the data
13:55	Sound velocity cast in the navigation channel
14:40	Complete the deep water, down-looking multi-beam performance testing lines
14:45	Bar check the multi-beam at 5' intervals to the bottom of the nav channel
15:15	Beam angle performance test results:
	At beam angles of 45-deg, the mean bias = -0.01' and the maximum outlier is 0.38'
	At beam angles of 60-deg, the mean bias = 0.07' and the maximum outlier is 0.37'
	*These numbers are within the USACE Hydrographic Survey manual minimum performance
	specifications
15:50	Start shallow water down-looking multi-beam performance test
15:50	READY II completing single-beam lines for single-beam performance test at deep water performance
	test location
15:55	Sound velocity cast on mudflats near RRYC (shallow water performance test site)
16:30	Process data for shallow water performance test
16:45	Beam angle performance test results:
	At beam angles of 45-deg, the mean bias = -0.02' and the maximum outlier is 0.27'
	At beam angles of 60-deg, the mean bias = 0.02' and the maximum outlier is 0.20'
16:50	Multi-beam head lifted out of the water
16:55	Multi-beam head rotated to the starboard side 45-deg
17:10	Sound velocity cast in the navigation channel
17:15	Preliminary test of shallow water performance test area with single-beam indicated a mean bias of
	0.23' which is larger than the USACE maximum threshold performance specifications
17:25	Second sound velocity cast from ABLE II because the measured profile near the water surface
	differs greatly from that being measured in real-time by the SV sensor on the multi-beam head.
17:40	The second SV cast agreed well with previous casts; however, a difference is still being measured
	by the real-time SV sensor at the multi-beam head

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17:50	It was determined that, as a result of the present tide conditions (full ebb tide) the conditions
	were not ideal to complete the patch test of the side-looking multi-beam head. Further, it was dark and
	becoming unsafe to be surveying in the navigation channel with other vessel traffic in the area
	-Therefore, both READY II and ABLE II headed back to RRYC
17:55	Tied up back at RRYC. Quit for the Day